Travis County Agricultural Land

In our Peak Oil Preparation group, we have been speculating about whether or not Austin has more people than could be fed with food grown locally. Since Jason Bradford attempted to answer the same question with regard to Willits, California, I decided to apply his calculations to Travis County.

On the Willits relocalization site[1], Jason writes that 2000 acres would be needed to feed the 13,000 people in the valley. This works out to .15 acres per person. An acre contains 43,560 square feet. Therefore, each person would need 6534 square feet.

Jason based this calculation on the work of John Jeavons, whose research farm is located on the outskirts of Willits. One important goal of his research is to figure out how to grow a complete diet in the smallest possible amount of land. Out of that research he has developed the plan of using intensively planted, raised beds of 100 square feet each (5 feet wide by 20 feet long or, if your arms aren't quite long enough to reach to the middle, 4 feet wide by 25 feet long). The table below shows the square footage you need if you use the minimal paths that John recommends: 1 foot wide on the two long sides and 2 foot side paths on the short ends (for ease in getting the wheelbarrow to each bed).

Bed Dimensions	5 feet by 20 feet	4 feet by 25 feet
Bed Growing Area	100 square feet	100 square feet
Long Side Paths	1 ft x 20 x 2 = 40 square ft	1 ft x 25 x 2 = 50 square ft
Short Side Paths	2 ft x 5 x 2 = 20 square ft	2 ft x 4 x 2 = 16 square ft
Total Path Space	60 square ft	66 square ft
Total Area	160 square feet	166 square feet

Using the figure of 160 square feet per growing bed, 6534 square feet (the amount Jason figures will be needed to feed each person) will equal 40.8 growing beds. In his advanced courses, Jeavons has his students plan for growing a complete diet in 40 beds. Having done the exercise, I can tell you that it's a challenge. The diet you get out of it will be vegetarian and low fat. To my mind, this means .15-acre per person is a bare minimum—a way to prevent starvation. A larger area per person would be much more comfortable.

But let us see if Travis County can support, even to this minimal extent, the number of people that currently live here on the amount of agricultural land we have available. Remembering the example of the Victory Gardens of World War II, we'll start by considering the amount of land that could be converted to growing food within the city limits of Austin.
According to the City of Austin 2000 Census data,[2] the population of Austin is approximately 650,000. Giving each of those people .15 acre of growing area will require 97,500 acres. The total number of acres in Austin is 170,020. Fortunately, the City of Austin document gives us a breakdown of land uses in Austin. I added a column beside each use to indicate whether I think any of that land could be made available for gardening and if so, about what percentage. The percentage is in some ways a wild guess, but it's a place to start. I used these assumptions to make my wild guess:

- Civic buildings can transform 35% of their acreage to gardens
- Commercial and office space can transform 25% of their acreage to gardens
- Half of large-lot, single-family acreage can be put into gardens (the other half will be too shady or too steep, etc.)
- Only 15% of multi-family development acreage could be put into gardens, unless a lot of concrete was ripped up—an energy intensive business!
- Ten percent of open space can be converted to farming (the rest of it needs to be preserved for it's tree cover and habitat)
- Sixty percent of undeveloped & unknown land can be converted to farming

Land Use	CITY OF AUSTIN	Available for Gardening?	Acres for Gardening
50 Large Lot Single-Family	4,293	50%	2150
100 Single-Family	37,268	See breakout below > 10%	See breakout below 3500
113 Mobile Homes	1,004	5%	50
200 Multi-Family*	6,744	15%	1110
300 Commercial	6,149	25%	1535
400 Office	4,351	25%	1088
500 Industrial	7,085	None	--
560 Mining	272	None	--
600 Civic	7,087	35%	2480
700 Open Space	26,491	10%	2649
800 Transportation	5,046	None	--
860 Right-of-way	22,626	None	--
870 Utilities	749	None	--
900 Undeveloped	36,693	60%	22,016
40 Water	4,002	None	--
999 Unknown	160	60%	96
Total Acres	**170,020**		**35,468**

*Food for thought: these 6,744 acres of multi-family housing in Austin hold 75,820 housing units. At the 15% conversion rate I have assumed, 38 square feet would be available per household for immediate food needs.

Single Family Housing Breakout

The number of acres devoted to Single Family housing is not the most useful figure for estimating convertible garden space. The 2000 US Census[3] reports 265,649 housing units in Austin (119,102 being owner-occupied and 146,547 being renter-occupied). If all of these households divided up the 37,268 acres evenly, each family would have .14 of an acre. But single-family lots in Austin vary in size and solar exposure. I'll guess that 70% of single family homes could plant an 800 square foot garden. So for the math: 70% of 265,649 households equals 185,954 gardens of 800 square feet each. Given that 1 acre equals 43,560 square feet, these gardens would occupy 3415 acres. This is less than 10 percent of the total acreage given over to single-family housing in Austin. So I'll round up to 3500 acres of single-family gardens.

Adding It All Up

Converting 33,224 of Austin's 170,020 acres to gardens would be a huge effort. Even if successfully accomplished, city residents would still be short 62,032 acres for growing a

complete diet. This is not surprising. Historically, cities have always relied on surrounding farmland to provide the bulk of food for city residents. How easy will it be for us to find 62,032 acres in Travis County for this purpose?

Travis County Farmland

Of course, Austin residents would not necessarily be limited just to the farmland in Travis county, but because it's easy to get numbers on a county-wide basis, I'm going to pretend that all Travis county farmland will be used for Austin city residents and the remaining 155,718[4] Travis County residents will be the ones who look beyond County boundaries for their food.

Subtracting Austin acreage from the Travis County total of 1,051,000 acres leaves 880,980 acres. The number of acres of irrigated cropland as reported to the Texas Water Development Board in its annual irrigation survey in 2000 was 1300.[5] Such a small number led me to look for more—a search that led me to some interesting history for our area.

In 1890 Travis County had 36,322 residents. Of these, 14,575 lived in Austin. By the turn of the century, Austin had 22,000 residents. Yet, in spite of this rapid increase in Austin's population, the majority of the county's residents lived on farms or in smaller towns, and agriculture dominated the area economy. According to The Handbook of Texas Online[6]:

> Cotton became the principal field crop in the late 1880s and remained so for more than sixty years. The 1890 census reported 65,000 acres-nearly 30 percent of the county's improved farmland-planted in cotton; by the turn of the century the amount of land devoted to cotton had increased to 113,300 acres, or 56 percent of the improved farmland. However, as more marginal land was used and the soil became depleted, production levels fell; in 1930, 143,000 acres produced only 19,000 bales.

From this same article we learn that in 1930, the county had 3,642 farms. The number of farms fell by more than 1,000 in the 1930s, and more of the remaining land was devoted to livestock. By 1980, 63 percent of the land in Travis County was devoted to farms and ranches.

> About 23 percent of the farmland was under cultivation, with sorghum, hay, wheat, and cotton accounting for nearly 70 percent of the 94,000 acres harvested; other crops were potatoes, sweet potatoes, peaches, and pecans. Sixty-six percent of the county's $32 million in agricultural receipts came from livestock and livestock products, the most important ones being cattle, milk, sheep, wool, and hogs.[7]

Now, 25 years later, how much land in Travis County is being farmed? According to a federal government statistics site[8], in 1997 the county had 396,165 acres of "farmland." But, the definition used for farmland is:

> **. . .** any land used to produce crops, livestock, specialty livestock, or grazing and includes woodland and wasteland not under cultivation or used for pasture or grazing. Conservation Reserve and Wetlands Reserve Program land is included in land in farms.

Obviously, we have to take all these statistics with a grain of salt. In 1890, 65,000 acres represented 30% of "improved farmland", which would mean total farmland was

216,667 acres. In 1980, 94,000 acres were "harvested," which sounds to me like the same thing as "improved farmland." I would think that 94,000 acres would be a generous assumption about how much Travis County land is under cultivation today.

I called the Travis County office of the USDA Service Center and asked how many acres are being cultivated in Travis County today. The agent told me that his figure does not include many small, 5-acre vegetable gardens around the county, which may add another several thousand acres to the total reported acreage of 38,000—down from 94,000 acres just 25 years ago!

Recall that we needed 62,032 acres outside of the Austin city limits to feed the residents of Austin. With only 40,000 acres being farmed today, we are 22,000 acres short. If we assume that all of those 94,000 acres from 1980 could be recovered and put back into cultivation, then subtracting the amount of land needed to feed Austin residents (94,000 – 62,032) would leave 31,968 acres as a surplus. Dividing this surplus equally among the residents of Austin would add a little over 2000 square feet, or 20 growing beds to each person's diet. This could perhaps provide a small amount of additional fat to the diet.

On the one hand, my statistical survey shows that enough land exists to feed everyone; on the other hand, the massive re-dedication of land-use that would be required just to provide a spartan diet for city residents makes a claim that Travis County has enough land to feed Austin's population seem ludicrous. (And, we haven't begun to calculate what kind of acreage would be needed to provide fuel, fiber, and construction materials.) No matter how you slice it, feeding Austin's current population from within Travis County would be extremely difficult and would use virtually ALL available land.

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[1] http://www.cloudforest.org/Willits_Economic_Localization/Visioning_The_Localization_Process

[2] http://www.ci.austin.tx.us/landuse/tabular.htm (Download "Land Use by COA Jurisdiction")

[3]US Census website report on Austin:
http://factfinder.census.gov/servlet/SAFFFacts?_event=ChangeGeoContext&geo_id=16000US4805000&_geoContext=&_street=&_county=Austin&_cityTown=Austin&_state=04000US48&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=010

[4]Us Census website report on Travis County:
http://factfinder.census.gov/servlet/SAFFFacts?_event=Search&geo_id=16000US4805000&_geoContext=01000US%7C04000US48%7C16000US4805000&_street=&_county=Travis&_cityTown=Travis&_state=04000US48&_zip=&_lang=en&_sse=on&ActiveGeoDiv=geoSelect&_useEV=&pctxt=fph&pgsl=160

[5] Texas Environmental Profiles:
http://www.texasep.org/html/cnty/prfls/cnty_prfls_226.html

[6] http://www.tsha.utexas.edu/handbook/online/articles/TT/hct8.html

[7] Ibid.

[8] http://www.fedstats.gov/qf/states/48/48453.html